Liverpool John Lennon Airport
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LJLA Airspace Transition

Design Principles Report

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1 Design Principles Development

This section details the background to the Liverpool John Lennon Airport Airspace Transition and the approach taken to develop Design Principles as a framework against which Design Options can then be produced.

1.1 Background

Liverpool John Lennon Airport (LJLA) wishes to comply with Resolution 36/23 ratified by the 36th International Civil Aviation Organisation (ICAO) General Assembly and also with the UK Future Airspace Strategy (FAS) published by the Civil Aviation Authority (CAA), by introducing routes and procedures compliant with Performance Based Navigation (PBN) criteria; it is understood that EU States are required to make these changes by 2024. The introduction PBN procedures at LJLA must be aligned with the FASI(N) project to ensure the complex interactions between UK northern airports are considered. This will also help to ensure the FASI(N) project can also deliver the environmental and efficiency benefits envisaged.

In order to introduce new procedures LJLA must follow guidance provided by the CAA and successfully complete the first 6 stages of CAP 1616 – Airspace Design. In Stage 1 (Define), the CAA require LJLA to satisfactorily assess the requirement for airspace change by producing a Statement of Need and produce a set of Design Principles that encompass the safety, environmental and operational criteria and policy objectives that LJLA aims for in developing its airspace change.

CAP 1616 states that is important for design principles to be drawn up through discussion between the Change Sponsor and potentially affected stakeholders at the early stages of the airspace change process. The aim of this engagement is to ensure change sponsors have a good level of understanding of the proposed change, and to ascertain what design considerations are important to stakeholders.

1.2 General Approach to Development of Principles

In order to fulfil the required engagement aims LJLA planned three focus groups and sent out Design Principles Questionnaires to aviation and non-aviation stakeholders. Non-aviation stakeholders included the Local Authorities and Local Planning Authorities (LPA), Members of Parliament, members of the airport's consultative committee (LJLACC) and noise monitoring sub-committee (NMSC). The aviation stakeholders included local Airlines, the local General Aviation (GA) community, airport operators and air navigation service providers (ANSP) and members of the National Air Traffic Management Advisory Committee (NATMAC). A full list of those contacted is included in Annex A1.

Following the focus groups and after the questionnaires were returned, a longlist of design themes was extracted from all responses and discussions as shown at Annex A6, Table 8. The longlist was assessed and further developed into the shortlist of Design Principles shown at Section 2, Table 3.

The shortlist was reviewed by stakeholders during a second round of engagement as described at Section 3. The stakeholder responses were analysed, and the prioritised shortlist of Design Principles was developed and is shown at Section 4, Table 5.

1.3 Design Principles Questionnaire

The Design Principles questionnaire included a summary of the current LJLA Air Traffic Management (ATM) operations and gave details of pertinent points stakeholders might wish to consider. This was emailed to selected stakeholders on 17 August 2018 with a requested return date of 17 September 2018. Several follow up emails were sent to remind consultees of the questionnaire timescales and offer an opportunity to attend one of the planned focus groups. In addition to the questionnaires sent to airport users, the local General Aviation community, local government representatives and chief planning officers and representatives of the LJLACC, a letter was also sent to members of NATMAC on 11 September 2018 with a return date of 15 October 2018, seeking any views NATMAC wish to express that would help to define the Design Principles. A follow-up email was sent to all NATMAC members on 9 October 2018, reminding them of the questionnaire deadline.

The specific questions asked in each version of the questionnaire can be seen at Annexes A2, A3, A4 and A5. Additionally, the background information common to each questionnaire is included as an attachment to this document.

1.4 Focus Groups

Following the guidance of CAP 1616, LJLA elected to undertake a series of focus groups to further elicit and discuss Design Principles with selected relevant stakeholders. Three focus groups were organised for different types of stakeholders including Airlines, General Aviators and Air Navigation Service Providers, LJLA Consultative Committee and Noise Monitoring Sub-Committee and Local Authorities. The focus group for Local Authorities attracted no attendees, but invitees believed they had been appropriately represented at the earlier LJLACC focus group.

The purpose of each focus group was to provide attendees with information regarding the need for airspace change at LJLA and the CAP 1616 process to be followed, particularly stressing the airport's desire and obligation to engage with stakeholders. The first level of this engagement would seek to jointly develop Design Principles that would serve as a framework against which alternative Design Options would be devised in the next stage of the CAP 1616 process.

In addition to discussing Design Principles, the focus groups were asked to assess the appropriateness of the CAA's decision to allocate this airspace change process a Level 1 status; there was unanimous agreement that this was the appropriate level. Minutes of the focus groups are attached to this report.

The focus groups planned and undertaken are detailed in Table 1 below:

Focus Gp (a)	Attendees (b)	Date (c)
FG 1	Airport users, General Aviation, Air Navigation Service Providers	13 September 2018
FG 2	LJLA Consultative Committee and Noise Monitoring Sub Committee	27 September 2018
FG 3	Local Planning Authorities	5 October 2018

Table 1 - Focus Group Details

2 Shortlist of Design Principles

This section details some constraints and also the development of the shortlist of Design Principles as drawn from responses received during focus group meetings and detail contained in completed questionnaires.

2.1 LJLA Design Constraints

A number of Design Constraints were identified and described in the Statement of Need. These constraints are summarised in Table 2 below. As with any airspace design change it must also be understood that safety of operations is the paramount consideration when determining Design Principles and subsequently developing the Design Options.

No (a)	Design Constraints (b)
1.	Safety of operations is the paramount consideration
2.	Routes and procedures must be compliant with PBN criteria
3.	New procedures must be aligned with the overall FASI(N) project
4.	New procedures should be aligned with other airspace user's requirements
5.	The new procedures must not change existing or new entry and exit points to the en-route airways structure
6.	Where possible, environmental benefits should be sought

Table 2 - LJLA's Design Constraints

2.2 Shortlist of Design Principles

A long list of design themes/potential principles was drawn from the conversations during the focus groups and from responses received in the questionnaires. Table 8 shows a breakdown of the themes and responses as well as the source of those points. A broad Design Principle Theme is shown in this table and a Specific Shortlisted Design Principle was developed amalgamating the various themes. Fifteen shortlist Design Principles were identified and are shown in Table 3 below. The list is ordered according to the number of times each theme was raised by a different stakeholder. A broad category was allocated to each Design Principle.

No (a)	Category (b)	Design Principle (c)	Count (d)	Long list Ref[1] (e)
1.	Environmental	Procedures should be designed to minimise the impact of noise below 7,000ft	12	Nos 01-12
2.	Technical	Procedures should be designed to fit within existing or proposed airspace constraints and boundaries	10	Nos 13-22
3.	Technical	Procedures should be designed to enable more continuous climbs	8	Nos 23-30
4.	Technical	Procedures should be designed to be technically flyable and maintain existing operational performance and capacity	7	Nos 31-37
5.	Environmental	Procedures should be designed to avoid overflight of sensitive areas e.g. hospitals, schools, country parks, high risk industrial sites	6	Nos 38-43
6.	Technical	Procedures should be designed to enable more continuous descents	5	Nos 44-48
7.	Operational	Procedures should be designed to ensure predictability of tracks for consistency of operations	5	Nos 49-53
8.	Environmental	Procedures should be designed to minimise aircraft emissions to reduce air pollution	4	Nos 54-57

[1] Derived from Column a in Table 8.

No (a)	Category (b)	Design Principle (c)	Count (d)	Long list Ref[1] (e)
9.	Operational	Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCO) workload	3	Nos 58-60
10.	Safety	Procedures should be designed to meet acceptable levels of flight safety	2	Nos 61-62
11.	Economic	Procedures should be designed that minimise the number of track miles flown	2	Nos 63-64
12.	Environmental	Procedures should be developed to allow for alternative routes to offer respite	2	Nos 65-66
13.	Technical	If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	2	Nos 67-68
14.	Technical	Procedures should be designed to alternate routes to avoid other aviation operators	1	Nos 69
15.	Environmental	Procedures should be designed to concentrate routes to minimise the numbers overflown	1	Nos 70

Table 3 - Shortlist of Design Principles

Table 4 below is drawn from Table 3 above and summarises the number of Design Principles that fall into each category.

No (a)	Design Principle Category (b)	Design Principle Count (c)
1.	Environmental	5
2.	Technical	6
3.	Operational	2
4.	Safety	1
5.	Economic	1

Table 4 - Design Principle Categories

A review of the Design Principles indicates that the 15 Design Principles identified there is no requirement to reject one principle over another and all 15 Design Principles can therefore be used as a framework against which the Design Options can be developed at CAP 1616 Step 2A.

Not only is it important to have a list of Design Principles, but these should also be ranked in priority order. This could be important as Design Options are developed and where a choice presents itself concerning which Design Principle has primacy should conflicts occur.

The next section shows how continued engagement with stakeholders was conducted in order to understand the importance stakeholders attached to the developed Design Principles.

3 Design Principle Review

This section describes the Design Principle review that was undertaken during a second round of engagement to assist with the prioritisation of the shortlist of Design Principles.

3.1 Review Process

On 15 October 2018, the Design Principles were sent to all organisations and individuals that had responded to the questionnaires or attended a focus group meeting. Stakeholders were asked to review the Design Principles and offered the opportunity to comment further, specifically requesting their thoughts on how these Design Principles should be prioritised.

Specifically, consultees were asked to provide the following information regarding each Design Principle:

1. Do you agree with this Design Principle?
2. How would you rate this Design Principle?
    - Very Important
    - Important
    - Neutral
    - Not Important
3. Rank the 15 Design Principles in order of priority from 1 (Highest) to 15 (Lowest).
4. If you feel any of the Design Principles are not applicable to you, please mark it as '0'.
5. Please provide comments as to why you agree or disagree with the Design Principle.
6. Suggest any additional Design Principles you feel ought to be considered by LJLA.

A review of the feedback received is provided in paras 3.5 to 3.19 below.

3.2 Responses Received

From the emails sent out to organisations and individuals that had responded to the questionnaire or attended a focus group there were a total of 8 responses from the following organisations:

- Cheshire West and Chester Council
- Knowsley Metropolitan Borough Council (MBC)
- Hale Bank Parish Council
- Defence Airspace and Air Traffic Management (DAATM)
- National Police Air Service (NPAS)
- Liverpool Flying School (LFS)
- Manchester Airport
- BAE Systems Warton

In addition to the specific importance, ranking and comments provided for each Design Principle, the consultees were given the opportunity to provide more general comments.

Manchester Airport restricted their comments in line with their capacity as an aviation stakeholder, and only commented on principles that would have a direct impact on Manchester Airport and the future operation of the airspace surrounding both airports. Manchester Airport stated their priorities with regard to LJLA's airspace development were:

- Safety
- Designing to technical "flyability" standards
- Designing procedures to remain within existing and future airspace constraints

The Liverpool Flying School (LFS), who provided responses with respect to General Aviation (GA) and flying training, stated that they considered the lowering of emissions was important in the more general context of national political and social priorities. Furthermore, the priorities for airspace change from a GA perspective were:

- Flight safety – including the availability of Forced and Precautionary landing opportunities
- Consistency and predictability – changes will involve risk and the need for retraining.
- Avoiding additional complexity
- Reduced ATC workload – but not as an excuse for reduced ATC staffing levels

NPAS urged LJLA to consider operators of non-performance A aircraft, such a multi-engine piston operators, who may not have the same climb performance. These operators (including NPAS) would welcome the introduction of procedures as long as the flight profiles cater for all aircraft types and their limitations in terms of performance.

3.3 Prioritisation Methodology

In order to produce a prioritised list of Design Principles, the returns were analysed both in terms of the importance rating and the priority ranking provided by each stakeholder.

The average of the scores attributed to each Design Principle by the stakeholders was also used to determine a ranking of the Design Principles. A score of zero was discounted when calculating the average score as this would skew the average score in favour of higher priority.

For the importance rating, the ranking was achieved by giving each importance rating a score (Very Important – 1 point; Important – 2 points; Neutral – 3 points and Not Important – 4 points) and determining the cumulative score for each Design Principle. The Design Principle with the lowest cumulative score was ranked the highest for importance, the Design Principle with the highest cumulative score was ranked the least important.

The overall priority of each Design Principle, as shown in Table 5, was determined based on the average of the two rankings achieved and on the importance rating and priority ranking, as described above.

3.4 Prioritisation Returns and Assumptions

Due to the incomplete return, assumptions have been made from the reply from the MOD Defence Air and Air Traffic Management (DAATM) organisation as follows:

- MOD comments state that they agree Flight Safety is and should remain as number one priority. As such Design Principle 1 was given a score of 1. DAATM provided no other scores for the Design Principles.
- The comments state that 'if procedures are not able to fit in the current controlled airspace boundaries, the impact on other airspace users, including MOD assets would need to be identified and fully understood'. DAATM did not provide a rating for this Design Principle, so it has been assumed to be 'Important'.

BAES Warton only provided an importance rating in their return so only this has been used in the analysis. No assumption has been made on the Design Principle ranking.

There were no additional Design Principles provided for consideration.

3.5 DP1 Procedures should be designed to minimise the impact of noise below 7,000ft

3.5.1 Summary of Feedback

Knowsley MBC stated that whilst they weren't aware of any significant problems arising from the current LJLA procedures, they would support the introduction of operating procedures that reduce the impact of noise on Knowsley's communities.

3.5.2 How has the feedback influenced the Design Principle?

This Design Principle did not affect all consultees, however for those that would be directly impacted, this Design Principle was ranked very highly therefore the wording has been amended to elevate the importance of it. This Design Principle will be carried forward to the Design Options stage.

3.5.3 Proposed text of Design Principle and Priority

Priority =4 Design Principle – Procedures must be designed to minimise the impact of noise below 7,000ft.

3.6 DP2 Procedures should be designed to fit within existing or proposed airspace constraints and boundaries

3.6.1 Summary of Feedback

The response received for this Design Principle were very varied, and largely were divided between aviation and non-aviation consultees. Generally, the aviation consultees considered this principle to be more important than non-aviation consultees, and this was reflected in the comments received.

BAE Systems Warton stressed that from their perspective they would not wish there to be any increase in Controlled Airspace (CAS) as a result of this proposal. LFS indicated that changes to the existing airspace would involve an added level of risk and would require all GA operators to be made aware, and where required, retrained. DAATM stressed that if the existing airspace boundaries were to change, they would

expect a thorough analysis of the impact on other airspace users (including MOD assets) to be undertaken so the impact was fully identified and understood.

3.6.2 How has the feedback influenced the Design Principle?

As a result of the importance many consultees gave this Design Principle, it will be taken forward to the Design Options stage.

3.6.3 Proposed text of Design Principle and Priority

Priority =7 Design Principle – Procedures should be designed to fit within existing airspace constraints and boundaries.

3.7 DP3 Procedures should be designed to enable more continuous climbs

3.7.1 Summary of Feedback

This Design Principle also had a mix of responses. Knowsley MBC and LFS considered that if this approach reduced noise or emissions they would be broadly in favour of the proposal.

3.7.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.7.3 Proposed text of Design Principle and Priority

Priority 6 Design Principle – Procedures should be designed to enable more continuous climbs.

3.8 DP4 Procedures must be designed to be technically flyable and maintain existing operational performance and capacity

3.8.1 Summary of Feedback

All consultees were in agreement that this Design Principle was important, with Knowsley MBC pointing out that designing any procedure outside of these parameters would be pointless. DAATM stated that the most important aspect from their perspective was that MOD assets should be able to continue to use LJLA as a Practice Diversion airfield. LFS stated that their priority is for a reduction of complexity wherever possible.

3.8.2 How has the feedback influenced the Design Principle?

This Design Principle will be carried forward to the Design Options stage.

3.8.3 Proposed text of Design Principle and Priority

Priority =4 Design Principle – Procedures must be designed to be technically flyable and maintain existing operational performance and capacity.

3.9 DP5 Procedures should be designed to avoid overflight of sensitive areas e.g. hospitals, schools, country parks, high risk industrial sites

3.9.1 Summary of Feedback

The majority of responses considered this Design Principle to be important, however LFS stated that whilst they agreed with the principle, the requirement for light aircraft to be able to access emergency landing sites should be considered.

3.9.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.9.3 Proposed text of Design Principle and Priority

Priority 3 Design Principle – Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, parks, high risk industrial sites.

3.10 DP6 Procedures should be designed to enable more continuous descents

3.10.1 Summary of Feedback

The responses for this Design Principle were very mixed with consultees responses ranging from “Very Important” to “Not Important”.

3.10.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.10.3 Proposed text of Design Principle and Priority

Priority =7 Design Principle – Procedures should be designed to enable more continuous descents.

3.11 DP7 Procedures should be designed to ensure predictability of tracks for consistency of operations

3.11.1 Summary of Feedback

This Design Principle also received a very mixed selection of responses; LFS stated that predictability and consistency were important for GA private pilots and students however accuracy of track miles was less important. Unfortunately, LJLA did not receive any responses from the Airport Operators who initially proposed this Design Principle and it is considered likely that had they responded, Airport Operators would have ranked this principle highly.

3.11.2 How has the feedback influenced the Design Principle?

This Design Principle will be carried forward to the Design Options stage.

3.11.3 Proposed text of Design Principle and Priority

Priority 14 Design Principle – Procedures should be designed to ensure predictability of tracks for consistency of operations.

3.12 DP8 Procedures must be designed to minimise aircraft emissions to reduce air pollution

3.12.1 Summary of Feedback

LFS stated that it considered the reduction of aircraft emissions to be a general principle going forwards, and Knowsley MBC stated that it would support the introduction of operating procedures that reduce the impact of emissions on Knowsley's communities.

3.12.2 How has the feedback influenced the Design Principle?

This Design Principle was ranked very highly amongst all consultees and will be brought forwards to the Design Options stage.

3.12.3 Proposed text of Design Principle and Priority

Priority 2 Design Principle – Procedures must be designed to minimise aircraft emissions to reduce air pollution.

3.13 DP9 Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCO) workload

3.13.1 Summary of Feedback

This Design Principle also received a broad range of responses, once again broadly divided between aviation consultees and non-aviation consultees. BAE Systems Warton stated that they would not wish to see the workload of LJLA Air Traffic Controllers (ATCOs) increase and thereby impacting users operating outside of CAS as a result of LJLA ATCOs not being able to answer calls or coordinate with other Air Navigation Service Providers (ANSPs).

3.13.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.13.3 Proposed text of Design Principle and Priority

Priority =12 Design Principle – Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.

3.14 DP10 Procedures must be designed to meet acceptable levels of flight safety

3.14.1 Summary of Feedback

DAATM, on behalf of the MOD, considered that flight safety is and should always remain LJLA's number one priority. Knowsley MBC acknowledged that flight safety was outside of the remit and experience of the council but stated that flight safety must be an absolute priority for LJLA and flight operations. All consultees agreed that this Design Principle was the most important.

3.14.2 How has the feedback influenced the Design Principle?

This Design Principle has been ranked most highly by all consultees therefore it will be carried forward to the Design Options stage.

3.14.3 Proposed text of Design Principle and Priority

Priority 1 Design Principle – Procedures must be designed to meet acceptable levels of flight safety.

3.15 DP11 Procedures should be designed that minimise the number of track miles flown

3.15.1 Summary of Feedback

There was broad agreement amongst consultees that this Design Principle was important. Once again, Knowsley MBC and LFS stated their support for operating procedures that reduce the impact of emissions.

3.15.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.15.3 Proposed text of Design Principle and Priority

Priority 9 Design Principle – Procedures should be designed that minimise the number of track miles flown.

3.16 DP12 Procedures should be developed to allow for alternative routes to offer respite

3.16.1 Summary of Feedback

This Design Principle created some uncertainty amongst some of the consultees as this principle has clear benefits and disbenefits dependent on one's frame of reference. Cheshire West and Chester Council stated that this Design Principle would distribute the impact of noise more evenly but could affect the predictability of tracks for consistency of operations; equally this could impact the number of track miles flown and so increase fuel burn and emissions. Alleviating one issue could inadvertently worsen another and so any assessment would need to take into consideration all the implications to achieve an appropriate compromise. Additionally, Knowsley MBC stated that they were currently unaware of any problems caused by the current routes and would be cautiously negative about overflying areas not currently affected by aircraft noise.

3.16.2 How has the feedback influenced the Design Principle?

This Design Principle, to an extent, contradicts Design Principle 15, however LJLA consider it is important to include both principles so that an appropriate balance can be struck between the two.

3.16.3 Proposed text of Design Principle and Priority

Priority 11 Design Principle – Procedures should be developed to allow for alternative routes to offer respite.

3.17 DP13 If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.

3.17.1 Summary of Feedback

The majority of aviation consultees considered this Design Principle to be "Important" or "Very Important". LFS considered that a review should be undertaken to consider the area around Chester, with respect to handovers to Hawarden. BAE Systems Warton agreed that any opportunity to revise the existing airspace structure to accommodate other user requirements should be considered and implemented where possible.

3.17.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.17.3 Proposed text of Design Principle and Priority

Priority 10 Design Principle – Procedures should be designed to allow the alteration of existing airspace to accommodate existing airspace users.

3.18 DP14 Procedures should be designed to include alternative routes to avoid other aviation operators

3.18.1 Summary of Feedback

There were mixed responses to this Design Principle from consultees, with some aviation and non-aviation consultees considering that this was not important. LFS stated that this principle would be important however there were unaware of any situations around LJLA where this was necessary or there were already sufficient existing alternative options. BAE Systems Warton reiterated that they would not wish to see any changes that impacted Warton operations that predominantly take place outside of CAS.

3.18.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage.

3.18.3 Proposed text of Design Principle and Priority

Priority 15 Design Principle – Procedures should be designed to include alternative routes to avoid other aviation operators.

3.19 DP15 Procedures should be designed to concentrate routes to minimise the numbers overflown

3.19.1 Summary of Feedback

In the same manner as Design Principle 12, this principle created a level of uncertainty about the best way to proceed for a number of consultees. Cheshire West and Chester Council states that whilst this has an advantage in that less people would be affected, the disadvantage is that those that are would be subject to more noise. Knowsley MBC also commented that as they were unaware of any significant

problems for Knowsley's communities they were unable to comment positively or negatively until the routes have been chosen.

LFS did not consider this Design Principle to be important but stressed that LJLA should bear in mind that the effect of noise in rural areas would be greater due to the lower level of general background noise.

3.19.2 How has the feedback influenced the Design Principle?

This Design Principle will be taken forward to the Design Options stage. LJLA consider it vital that both this principle, and Design Principle 12 are taken forward to allow a balance to be struck between the two principles.

3.19.3 Proposed text of Design Principle and Priority

Priority =12 Design Principle – Procedures should be designed to concentrate routes to minimise the numbers overflown.

4 Prioritised Shortlist of Design Principles

This section shows the final prioritised shortlist of Design Principles, as derived from the Design Principles review described in Section 3.

4.1 Design Principle Review

In light of the feedback received from stakeholders during the review described above in Section 3, the prioritised shortlist of Design Principles is shown in Table 5 below.

Prioritised DP (a)	DP No (b)	Design Principle (c)	Category (d)
1	10	Procedures must be designed to meet acceptable levels of flight safety.	Safety
2	8	Procedures must be designed to minimise aircraft emissions to reduce air pollution.	Environmental
3	5	Procedures should be designed to avoid overflight of sensitive areas, e.g. hospitals, schools, country parks, high risk industrial sites.	Environmental
=4	1	Procedures must be designed to minimise the impact of noise below 7,000ft.	Environmental
=4	4	Procedures should be designed to be technically flyable and maintain existing operational performance, and capacity.	Technical
6	3	Procedures should be designed to enable more continuous climbs.	Technical
=7	2	Procedures should be designed to fit within existing airspace constraints and boundaries.	Technical
=7	6	Procedures should be designed to enable more continuous descents.	Technical
9	11	Procedures should be designed that minimise the number of track miles flown.	Operational

Prioritised DP (a)	DP No (b)	Design Principle (c)	Category (d)
10	13	If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users.	Technical
11	12	Procedures should be developed to allow for alternative routes to offer respite.	Environmental
=12	9	Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCOs) workload.	Operational
=12	15	Procedures should be designed to concentrate routes to minimise the numbers overflown.	Environmental
14	7	Procedures should be designed to ensure predictability of tracks for consistency of operations.	Operational
15	14	Procedures should be designed to include alternative routes to avoid other aviation operators.	Technical

Table 5 - Prioritised Design Principles

5 CAP 1616 - Next Steps

This short section describes the anticipated dates for completion of the remaining CAP1616 stages.

5.1 Next Steps

This document will be submitted to the CAA as evidence to support Step 1B of the CAP 1616 airspace change process ahead of the Stage 1 Define Gateway.

Following the CAA's acceptance of the documentation and subsequent publication further stakeholder engagement meetings will be organised to discuss the Design Options once they are developed. The Design Principles will be used as the framework against which Design Options are developed to address the Statement of Need.

Currently, LJLA's estimated timeline for subsequent stages of this process is shown in Table 6 below:

CAP 1616 Stage (a)	Estimated Completion Date (b)
Stage 1 Define	30 Nov 18
Stage 2 Develop and Assess	22 Feb 19
Stage 3 Consult	2 Aug 19
Stage 4 Update and Submit ACP	13 Dec 19
Stage 5 Decide	28 Aug 20
Stage 6 Implement	31 Dec 20

Table 6 - LJLA ACP Timeline

A1 Stakeholders Contacted - Step 1B

Type	Contact
Airline	Air Ambulance - Babcocks
	Blue Air - Pilot
	Blue Air - LPL Base Captain
	BMI Regional
	easyJet - LPL Base Captain
	easyJet - Flight Ops Regulatory Affairs Captain
	FlyBe - Flight Support Manager
	FlyBe - Flight Ops Services Manager
	NPAS Police - Ops Director
	NPAS Police - Chief Pilot/Head of Flight Operations
	Ryanair - LPL Base Captain
	Stobart Air - Operations Director
	Titan Airways - Ops Flight Manager
	TUI - Head of Aircraft Operations
	TUI
	Wideroe - Head of OCC
	Wizz Air - Head of Crew Training
	Wizz Air - Chief Pilot/Head of Flight Operations
	XLR - General Manager
	XLR - Director
Local GA Community	Helicentre - MD
	Keen Air
	Liverpool Flying School - CFI
	Lomac Aviators - Compliance Manager
	Mersey Flight - CFI/Owner
	Raven Air - Operations Director
ANSP	NERL Prestwick Centre - Manager ATC Airspace Design Manchester Airport – NATS Hawarden - SERCO
Airport	City Airport - Airport Manager
	Warton – Chief Test Pilot
	Manchester – Ops Dir
	Hawarden – Safeguarding Officer
	RAF Valley - SATCO

Type	Contact
LA & LPA	Halton Borough Council - Chief executive
	Halton Borough Council - Planning & Development
	Knowsley Metropolitan Borough Council - Chief executive
	Knowsley Metropolitan Borough Council - Head of Planning
	Liverpool City Council - Chief executive
	Liverpool City Council - Head of Planning
	St Helens Metropolitan Borough Council - Chief executive
	St Helens Metropolitan Borough Council - Development Control Manager
	Sefton Metropolitan Borough Council - Chief executive
	Sefton Metropolitan Borough Council - Chief Planning Officer
	Wirral Metropolitan Borough Council - Chief executive
	Wirral Metropolitan Borough Council - AD - Environmental Services
	Cheshire West and Chester Council - Chief executive
	Cheshire West and Chester Council - Planning and Property Business Development Manager
	Wigan Borough Council - Chief executive
	Wigan Borough Council - Service Manager (Development Management and Building Control)
	Warrington Borough Council - Interim Chief Executive
	Warrington Borough Council - Head of Planning
	Lancashire County Council - Chief Executive Officer and Director of Resources
	Lancashire County Council - Head of Planning
	Flintshire County Council - Chief executive
	Flintshire County Council - Head of Planning
	Liverpool City Region Combined Authority - Head of Policy
	Liverpool City Region Combined Authority - Transport Panel Chair
	Wrexham - Chief Executive
	Wrexham County Council - Planning Policy Manager
MP	City of Chester County
	Weaver Vale County
	Ellesmere Port and Neston County
	Wirral South County
	Wirral West County
	Birkenhead Borough
	Wallasey Borough
	Warrington South Borough

Type	Contact
	Halton County
	Garston and Halewood Borough
	Liverpool, Riverside Borough
	Liverpool, Wavertree Borough
	Warrington North Borough
	St. Helens South and Whiston Borough
	Knowsley Borough
	Liverpool, West Derby Borough
	Liverpool, Walton Borough
	Bootle Borough
	Sefton Central County
	Southport Borough
LJLA Noise Monitoring Sub-Committee (NMSC)	NMSC
	Passenger Representative
	Environmental Health, Knowsley Metropolitan Borough Council
	Liverpool City Council – Cressington Ward Councillor
	Speke Estate
	Environmental Health, Liverpool City Council
	Environmental Health, Cheshire West and Chester Council
	Environmental Health, Wirral Borough Council
	Hale Parish Council
	Chairman of Consultative Committee
	ARCH under the Bridge (formerly Garston under the Bridge Community)
	Liverpool City Council - Speke – Garston Ward Councillor (or alternative Councillor)
	Environmental Health, Halton Borough Council
	South Wirral Community (Wirral Transport Users Association)
	Airport Users (detailed in list under airlines etc above)
LJLA Consultative Committee	Lancashire County Council
	ARCH under the Bridge (formerly Garston under the Bridge Community)
	Frodsham Town Council
	Halewood Town Council
	Liverpool & Sefton Chamber of Commerce & Industry
	St Helens Metropolitan Borough Council
	Liverpool Local Enterprise Partnership (LEP)

Type	Contact
	Wirral Older People's Parliament
	Passenger Representative
	Helsby Parish Council
	Halton Borough Council
	Hale Parish Council
	Liverpool Airport General Aviation Users Association (LAGAUA)
	West Cheshire and North Wales Chamber of Commerce
	Wirral Metropolitan Borough Council
	Liverpool City Region Combined Authority and its subsidiary organisations Merseytravel and the LEP
	National Trust
	Cheshire West and Chester Council
	Knowsley Metropolitan Borough Council
	Warrington Borough Council
	Friends of Liverpool Airport (FOLA)
	Disabled persons
	Sefton Metropolitan Borough Council
	Halebank Parish Council
	Liverpool City Council
	South Wirral Community (Wirral Transport Users Association)
	North Cheshire Rail Users' Group
NATMAC	British Gliding Association - Chair BGA Airspace Sub-Committee
	Honourable Company of Air Pilots - Director of Aviation Affairs
	Airlines UK
	AOA 1
	AOA 2
	AOG
	AOPA 1
	AOPA 2
	ARPAS
	BA
	BAe Systems
	BALPA
	BBAC
	BBGA
	BGA

Type	Contact
	BHA
	BHPA
	BMAA / GASCo
	BMFA
	BPA
	FASVIG
	GAA
	GATCO
	HCGB
	Heavy Airlines
	Isle of Man
	LAA
	Low Fare Airlines
	MAA
	MoD DAATM
	NATS 1
	NATS 2
	Navy Command HQ
	PPL/IR
	UKAB
	UKFSC
	USAFE (3rd AF DOF)

Table 7 - Stakeholders Contacted

A2 Airports and ANSPs Questionnaire

Q1 - Please list any altitude constraints, together with reasons, that LJLA should consider when designing its new PBN procedures?

Q2 - Please inform us of the latest proposed timescales for any neighbouring airspace/procedure re-design projects?

Q3 - Please advise us of any future requirements for improved coordination (particularly adjacent/contiguous routes) between LJLA and adjacent ATC units that should be considered during the development of new LJLA PBN procedures?

Q4 - Are there any current coordination arrangements with LJLA that you would like to see remain or change as a result of LJLAs new procedure design? Please provide a brief description.

Q5 - Are there any aspects of FAS (e.g. airway entry/exit points, existing planned or new handover points) that LJLA should take into account in the design of procedures? Please provide details.

Q6 - Are you aware of anything in the CAA draft Airspace Modernisation Strategy that presents a risk or opportunity to LJLA PBN procedure development? Please provide details.

Q7 - Are there any enroute infrastructure changes (planned/in progress) e.g. VOR/navaid phase outs that LJLA may not be aware of and should consider as part of their design?

Q8 - Do you have an existing Letter of Agreement or Memorandum of Understanding or other agreement with LJLA? If so, do you see this as:

(A) An agreement you would like to see remain, preferably in its current form.
(B) An opportunity to alter or extend this agreement – and how?

An agreement that is unfit for purpose (or may come to be as a result of the change).

Q9 - Please let us know if there are any time-based constraints that you consider LJLA should take into account when running this project? Please provide details and reasons.

Q10 - Please tell us if there are there any other operational constraints that LJLA will need to consider when planning its new inbound and outbound procedures?

Q11 - Please inform us of who you consider to be the other key local aviation stakeholders that you believe LJLA should engage with during the process of designing its new procedures in detail? (ie Tilsock) Please provide details and reasons.

Q12 - Please provide details of any constraints imposed by restricted operations in the area encompassed by LJLA Airport flight operations (e.g. military operations, danger areas, restricted areas, route crossings, transit corridors, training areas etc.)?

Q13 - Please indicate if you feel there is a requirement for improved coordination between LJLA and adjacent ANSP (ATC) units that should be considered during the development of the Design Principles, Design Options and when implementing the new LJLA PBN procedures?

Q14 - Please provide details of any issues or constraints due to local helicopter operations that you believe may have an impact on LJLA's procedure design project?

Q15 - We would be grateful for any views you may wish to express regarding how LJLA should balance the needs of passengers against the needs of the local community?

Q16 - Please advise us of any other issues or constraints you feel LJLA should consider when designing its new PBN procedures? Please provide details.

A3 Airline Operators and GA Questionnaire

Q1 - Please list any altitude constraints, together with reasons, that LJLA should consider when designing its new PBN procedures?

Q2 - Please let us know if there are any time-based constraints that you consider LJLA should take into account when running this project? Please provide details and reasons.

Q3 - Please tell us if there are there any other aircraft operational constraints that LJLA should consider when planning its new inbound and outbound procedures? (restrictive speeds, distances, climb rates, rates of descent, etc.) Please provide details and reasons.

Q4 - Please inform us of who you consider to be the other key local aviation stakeholders that you believe LJLA should engage with during the process of designing its new procedures in detail? (ie Tilsock) Please provide details and reasons.

Q5 - Please provide details of any constraints imposed by restricted operations in the area encompassed by LJLA Airport flight operations (e.g. military operations, danger areas, restricted areas, route crossings, transit corridors, training areas etc.)?

Q6 - Please provide details of any issues or constraints due to local helicopter operations that you believe may have an impact on LJLA's procedure design project?

Q7 - Please provide details of any issues or constraints due to local GA/VFR operations, that you believe may have an impact on LJLA's procedure design project?

Q8 - Please indicate if you feel there is a requirement for improved coordination between LJLA and adjacent ANSP (ATC) units that should be considered during the development of the Design Principles, Design Options and when implementing the new LJLA PBN procedures?

Q9 - Do you have an existing Letter of Agreement or Memorandum of Understanding or other agreement with LJLA? If so, do you see this as:

(A) An agreement you would like to see remain, preferably in its current form.
(B) An opportunity to alter or extend this agreement – and how?

An agreement that is unfit for purpose (or may come to be as a result of the change).

Q10 - We would be grateful for any views you may wish to express regarding how LJLA should balance the needs of passengers against the needs of the local community?

Q11 - Please provide details of any constraints that may be occasioned by local GA/VFR and VFR/IFR flying training activities on the LJLA Airport procedure design project?

Q12 - Please provide details of any constraints that may be occasioned by local gliding activities on the LJLA Airport procedure design project?

Q13 - Please advise us of any other issues or constraints you feel LJLA should consider when designing its new PBN procedures? Please provide details.

A4 Local Govt and Planners Questionnaire

Q1 - When LJLA design new procedures for the airport, please list the facilities in your local area that you believe need to be protected from the impact of aircraft noise (eg hospitals, schools, parks, hospices etc)?

Q2 - Please tell us if multiple routes that spread noise across the greatest number of households are more of a priority for you than a single route that concentrates noise along a track above a smaller number of households?

Q3 - Please highlight your awareness of any particularly sensitive issues with aircraft noise over the night-time period.

Q4 - Please identify any other areas, in adjacent council/borough areas, but in your opinion require protection from either direct overflight or from aircraft noise?

Q5 - Do you believe aircraft conducting continuous climbs to altitude after taking off (where this is safe to do so) would improve exposure to noise in your local area?

Q6- Please tell us the locations of any particularly sensitive wildlife habitats, not already notified (linked to AONB[2], SSSI[3] etc), that you feel aircraft should avoid?

Q7 - Please state what principles you believe LJLA should adopt to mitigate (in full or in part) any concerns you may have regarding the impact of airliner exhaust fumes or pollution?

Q8 - Please bring to our attention any recent or ongoing local environmental studies, you feel should be considered by LJLA when designing its new procedures?

Q9 - Do existing Noise Preferential Routes (NPRs), agreed with LJLA Airport, meet current and future planned local government requirements?

Q10 - Is the LJLA Masterplan helping inform the local and core plans for your local authority?

https://www.liverpoolairport.com/about-ljla/liverpool-john-lennon-airport-master-plan-to-2050

Q11 - Are there any other local development projects, perhaps currently at the planning stage, that LJLA should be aware of and consider when planning its new procedure changes?

Q12 - Please list any other relevant local or national organisations that you believe LJLA should ensure are involved in its formal consultation in early 2019?

[2] AONB – Area of Outstanding Natural Beauty, as defined by Government and various related Acts of Parliament.
[3] SSSI – Site of Special Scientific Interest, as defined by Government and various related Acts of Parliament.

Q13 - We would be grateful for any views you may wish to express regarding how LJLA should balance the needs of passengers against the needs of the local community?

Q14 - Are there any other local issues or constraints you feel should be considered by LJLA, and that would inform the development of design principles, that will then be used to guide the development of options for the geographical location of LJLA arrival and departure procedures?

A5 Public Representative Questionnaire

Q1 - Please provide the location of any future planned facilities you are aware of in your local area that should be protected from the impact of aircraft noise; please state why you feel this is necessary?

Q2 - Are multiple routes that spread noise across the greatest number of households more of a priority for you than a single route that concentrates noise along a track above a smaller number of households?

Q3 - Please highlight your awareness of any particularly sensitive issues with aircraft noise over the night-time period.

Q4 - Please identify any other areas, that are not necessarily local to you, but in your opinion require protection from either direct overflight or from aircraft noise?

Q5 - Do you believe aircraft conducting continuous climbs to altitude after taking off (where this is safe to do so) would improve (lessen) exposure to noise in your local area?

Q6- Please tell us the locations of any particularly sensitive wildlife habitats, not already notified, that you feel aircraft should avoid?

Q7 - Please state what principles you believe LJLA should adopt to mitigate (in full or in part) any concerns you may have regarding the impact of airliner exhaust fumes or pollution?

Q8 - Please bring to our attention any recent or ongoing local environmental studies, you feel should be considered by LJLA when designing its new procedures?

Q9 - We would be grateful for any views you may wish to express regarding how LJLA should balance the needs of passengers against the needs of the local community?

Q10 - Are there any other local issues or constraints you feel should be considered by LJLA, and that would inform the development of design principles, that will then be used to guide the development of options for the geographical location of LJLA arrival and departure procedures?

A6 Longlist of Design Themes/Principles

Table 8 below shows the long list of responses (column b) derived from the Focus Group and Questionnaire responses. The long list has been organised by theme as reflected in column d. The themes have been amalgamated into the 15 Design Principles as shown earlier in Table 3 and Table 5.

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
1.	Use background noise to hide aircraft noise	FG 2	Route to minimise the impact of noise	1	Procedures should be designed to minimise the impact of noise below 7,000ft
2.	Route over industrial areas	FG 2	Route to minimise the impact of noise	1	
3.	Route over motorways and major roads	FG 2	Route to minimise the impact of noise	1	
4.	Route over residential areas rather than parkland areas	FG 2	Route to minimise the impact of noise	1	
5.	Route over the water	FG 2	Route to minimise the impact of noise	1	
6.	Longer journeys (more emissions) rather than generating noise over populated areas	FG 2	Route to minimise the impact of noise	1	
7.	Flight paths over the Mersey to limit noise in built up areas	PubReps	Route to minimise the impact of noise	1	
8.	Most direct route minimises number of people affected by noise	PubReps	Route to minimise the impact of noise	1	

[4] As depicted in Table 3.

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
9.	Needs of community priority over needs of businesses	PubReps	Route to minimise the impact of noise	1	
10.	Use Mersey as far as possible	Loc Govn	Route to minimise the impact of noise	1	
11.	Low flying over residential areas most sensitive receptors of noise	Loc Govn	Route to minimise the impact of noise	1	
12.	Minimise noise disruption to residents	Loc Govn	Route to minimise the impact of noise	1	
13.	Maintain low level corridor	AO&GA	Work within existing airspace constraints	2	Procedures should be designed to fit within existing or proposed airspace constraints and boundaries
14.	VFR procedures and traffic taken into consideration	AO&GA	Work within existing airspace constraints	2	
15.	Co-ordination with MAN procedures to avoid protracted routings	AO&GA	Work within existing airspace constraints	2	
16.	Procedures to remain within existing airspace structure	AP&ANSP	Work within existing airspace constraints	2	
17.	Deconflicted from Hawarden operations to allow independent ops	AP&ANSP	Work within existing airspace constraints	2	
18.	Use airspace designs and altitudes simulated by NERL FASI-N to accommodate MAN	AP&ANSP	Work within simulated airspace designs	2	
19.	Take into account FASI-N simulations	AP&ANSP	Work within simulated airspace designs	2	
20.	Interaction between LJLA east deps and MAN west deps	AP&ANSP	Work within existing airspace constraints	2	

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
21.	Consideration for existing MAN TMA entry and exit points	AP&ANSP	Work within existing airspace constraints	2	
22.	Maintain existing low level corridor	AP&ANSP	Work within existing airspace constraints	2	
23.	Vertical dispersion within the profile	FG 2	Enable Continuous Climb and Descent	3	Procedures should be designed to enable more continuous climbs
24.	Continuous Climb profile	FG 2	Enable Continuous Climb Departure	3	
25.	Continuous climbs	AO&GA	Enable Continuous Climb Departure	3	
26.	Expeditious handovers to avoid level off	AO&GA	Enable Continuous Climb and Descent	3	
27.	Reduce the need to level off to separate traffic	AP&ANSP	Enable Continuous Climb and Descent	3	
28.	Continuous Climb and Descent	AP&ANSP	Enable Continuous Climb and Descent	3	
29.	Continuous climbs will reduce noise	PubReps	Enable Continuous Climb Departure	3	
30.	Continuous climb to reduce noise	Loc Govn	Enable Continuous Climb Departure	3	
31.	250kts or less below FL100	AO&GA	The design must be technically flyable and maintain existing operational performance and capacity	4	Procedures should be designed to be technically flyable and maintain existing operational performance and capacity

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
32.	Speeds over 220kts to avoid delay to clean configuration (dep)	AO&GA	The design must be technically flyable and maintain existing operational performance and capacity	4	
33.	No limit to arrival speed	AO&GA	The design must be technically flyable and maintain existing operational performance and capacity	4	
34.	Avoid dep speeds below 230kts for config (250kts+ ideal)	AO&GA	The design must be technically flyable and maintain existing operational performance and capacity	4	
35.	Implement climb gradients >3°	AP&ANSP	The design must be technically flyable and maintain existing operational performance and capacity	4	
36.	Design is commensurate with the traffic mix and forecast and aircraft performance characteristics for LJLA airport	AP&ANSP	The design must be technically flyable and maintain existing operational performance and capacity	4	
37.	Employ best techniques to minimise fuel use and reduce emissions	Loc Govn	The design must be technically flyable and maintain existing operational performance and capacity; minimise emissions	4	
38.	Avoid places where the public go to enjoy days out i.e. AONB, parkland, bird sanctuaries	FG 2	Avoid overflight of sensitive areas	5	Procedures should be designed to avoid overflight of sensitive areas e.g. hospitals,

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
39.	Protect establishments from ac noise: Hosp; schools; parks; cemeteries;	Loc Govn	Avoid overflight of sensitive areas	5	schools, country parks, high risk industrial sites
40.	Areas sensitive to night noise: Hosp; hospices; residential; recreation; conference facs; theatres; places of worship	Loc Govn	Avoid overflight of sensitive areas	5	
41.	Avoid overflight of COMAH sites	PubReps	Avoid overflight of sensitive areas	5	
42.	Avoid priority wildlife habitats	Loc Govn	Avoid overflight of sensitive areas	5	
43.	Mersey estuary RAMSAR wildlife habitat	Loc Govn	Avoid overflight of sensitive areas	5	
44.	Continuous Descent Approaches	FG1	Enable Continuous Descent Approaches	6	Procedures should be designed to enable more continuous descents
45.	Continuous descents	AO&GA	Enable Continuous Descent Approaches	6	
46.	Expeditious handovers to avoid level off	AO&GA	Enable Continuous Climb and Descent	6	
47.	Reduce the need to level off to separate traffic	AP&ANSP	Enable Continuous Climb and Descent	6	
48.	Continuous Climb and Descent	AP&ANSP	Enable Continuous Climb and Descent	6	
49.	Certainty and Reproducibility of Routes	FG 1	Ensure predictability of tracks	7	Procedures should be designed to ensure predictability of tracks for consistency of operations
50.	Consistency of routes flown	FG 1	Ensure predictability of tracks	7	

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
51.	Consistency of operation	AO&GA	Ensure predictability of tracks	7	
52.	Reduced co-ordination between LJLA and MAN ATCO's	AP&ANSP	Ensure predictability of tracks; Minimise the need for vectoring	7	
53.	Co-ordination requirements not increased and possibly reduced	AP&ANSP	Ensure predictability of tracks; Minimise the need for vectoring	7	
54.	Reduce air pollution	Loc Govn	Minimise emissions	8	Procedures should be designed to minimise aircraft emissions to reduce air pollution
55.	Employ best techniques to minimise fuel use and reduce emissions	Loc Govn	The design must be technically flyable and maintain existing operational performance and capacity; minimise emissions	8	
56.	Shorter routes to reduce pollution	Loc Govn	Minimise track miles flown; minimise emissions	8	
57.	Positive impact on air quality	Loc Govn	Minimise emissions	8	
58.	Less input from ATC	FG 1	Minimise the need for vectoring	9	Procedures should be designed to minimise the need for aircraft vectoring to reduce Air Traffic Controllers (ATCO) workload
59.	Reduced co-ordination between LJLA and MAN ATCO's	AP&ANSP	Ensure predictability of tracks; Minimise the need for vectoring	9	
60.	Co-ordination requirements not increased and possibly reduced	AP&ANSP	Ensure predictability of tracks; Minimise the need for vectoring	9	
61.	Natural deconfliction from other aircraft	FG 1	Minimise the need for vectoring; Designs must meet the acceptable levels of flight safety	10	Procedures should be designed to meet acceptable levels of flight safety
62.	3nm separation between adjacent routes	AP&ANSP	Designs must meet the acceptable levels of flight safety	10	

No (a)	Focus Group/Questionnaire Responses (b)	Source (c)	Broad Design Principle Themes (d)	DP No (e)	Specific Shortlisted Design Principle[4] (f)
63.	More direct tracks	FG 1	Minimise track miles flown	11	Procedures should be designed that minimise the number of track miles flown
64.	Less track miles	FG 1	Minimise track miles flown	11	
65.	All residents should be considered equally	PubReps	Develop alternate routes to offer respite	12	Procedures should be developed to allow for alternative routes to offer respite
66.	Multiple routes to reduce concentration. Strong concerns about single route with high concentration	Loc Govn	Develop alternate routes to offer respite	12	
67.	Delegate/reduce existing CAS to accommodate Hawarden VFR traffic	AP&ANSP	Alter existing airspace procedures	13	If the design of the new procedures requires a smaller volume of airspace, airspace design or classification should be altered for the benefit of other airspace users
68.	Consideration of other airport's development plans	AP&ANSP	Alter existing airspace procedures	13	
69.	Different SIDs/STARs for when gliders active	AO&GA	Develop alternate procedures	14	Procedures should be designed to alternate routes to avoid other aviation operators
70.	Concentration to minimise numbers overflown	PubReps	Reduce impact of noise for some	15	Procedures should be designed to concentrate routes to minimise the numbers overflown

Table 8 - Long List of Themes Deriving Design Principles